Development of a Web-based Application for Offline Mass Registration

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Abstract— The emergence of Covid-19 in 2020 has changed many aspects of life in the world. The Covid-19 pandemic has also affected the economy, education and other sectors such as the social and religious fields. Due to restrictions on attending worship activities, the idea emerged to utilize facilities that were believed to assist worship activities. One of facilities contained in existing technology to assist houses of worship is online. The influence of technology during the pandemic on the social and religious sectors is considered to have great benefits. As an example of the impact that occurred in the Church of St. Theresia of the Bongsari Parish.

When mid-July 2020, after the government issued a New Normal policy, the Parish began to open mass activities by offline. The system used at that time included people registering through a collective list from the head of section where parishioners domicile nearby. However, the registration system is still considered ineffective, so the registration system is then developed using the Google Form facility. Although the offline mass registration system has undergone many developments, it still has many shortcomings. Therefore, the responsive web-based offline mass registration application is expected to be able to help the problems experienced by the church during the mass registration flow as well as the development of a dashboard as a means to be able to process data easily and efficiently for church administration officers. Application development is carried out using the ADDIE method, namely Analyze, Design, Development, Implementation, and Evaluation. In addition, the Rapid Application Development (RAD) method is also used to support the application development process. In this study, a survey with 60 respondents was carried out with the community, and from the test results it can be concluded that the usefulness of the offline mass registration application, as well as device support and the ease and pleasure of using this application have a correlation with the intention to use a website-based offline mass registration application.

Keywords— offline mass registration, web-based.

I. INTRODUCTION

The emergence of Covid-19 has transformed many life aspects. The malignant virus attacks the respiratory tract and causes from minor disturbances in the respiratory system, lung infections to death. Covid-19 is a virus that is easily transmitted, through droplets that come out of an infected person's cough or sneeze. On March 11, 2020, WHO officially declared that Covid-19 was a pandemic as a result of the fast widespread of this virus throughout the world [1]. The Indonesian government also designated Covid-19 as a national disaster on March 14, 2020, which was announced by the President through the Head of the National Disaster Management Agency in accordance with Law Number 24 of 2007 concerning Disaster Management [2].

The Covid-19 pandemic has also affected the economy, education and other sectors. One of them is in the social and religious fields. In the early days of the pandemic, many

places of worship decided to abolish worship activities or continue to hold worship activities while implementing health protocols as recommended by the government, namely washing hands, wearing masks, maintaining distance, staying away from crowds, and reducing mobility. However, these two options cause people to not be able to carry out worship activities optimally, due to restrictions on worship activities, so from that, the idea emerged to take advantage of facilities that are believed to be able to help carry out worship activities, one of which is the facilities contained in existing technology to assist houses of worship in carrying out religious activities as usual.

The influence of technology during the pandemic on the social and religious sectors is considered to have great benefits, as an example that occurred in the Parish of St. Theresia of the Bongsari Semarang.

At the start of the pandemic, the Parish canceled all offline mass as other houses of worship did and began to prepare for the needs for the online mass. The Parish was preparing facilities such as cameras to the formation of a multimedia team and task force team on duty during the online mass procession.

In mid-July 2020, after the government issued the New Normal policy, the church began to open offline mass activities. The system used at that time included people registering through the section head and then the head recorded the names. The region in St. Theresia Bongsari Parish comprises 43 sections, and each section is allowed to propose 10 people to be able to attend offline mass and to get the opportunity about twice a month. However, the registration system was considered to be still ineffective, then the registration system was developed using the Google Form facility, with the following flow: church administration officers created a form using Google Form. Then the form is distributed to the head of the neighborhood to be distributed to the people. The names of the registered parishioners will later be printed by the administrative officer to be used as a presence when entering the church building.

And at this time, the quota per section is no longer enforced, but the church determines a quota that can attend offline mass for the people.

Although the offline mass registration system has undergone many developments, it still has many shortcomings. Based on the results of discussions with Parish Priests and the Parish Council as well as interviews with the Head of Liturgy and Worship Division, Head of the Ward, and church administration officers, it was found that there were several problems in the offline mass registration system. Therefore, the responsive web-based offline mass registration application for the Parish of St. Theresia Bongsari Semarang in carrying out the offline mass is expected to be able to help the problems experienced by the church during the mass registration flow as well as the development of a dashboard as a means to be able to process data easily and efficiently for church administration officers

II. LITERATURE REVIEW
2.1 Web Based Application

Application is a software that aims to help process data [3] while the website is a system related to documents using media as a viewer of images, text, and others through the HTTP (Hypertext Transfer Protocol) protocol that can be accessed via a browser [4] so that web-based applications can be interpreted as software that can be accessed via a browser so making it easier to process user data.

2.2 Dashboard

Dashboard is a visual display of important information needed to achieve certain goals and dashboard is designed as well as possible so that at the time of presentation, users can capture information easily and can understand the meaning correctly [5].

2.3 Web Responsive

Responsive Web is one of the capabilities of web based applications to be able to adjust the display to the screen resolution of various gadgets, making it easier for users to use web based applications without moving or changing gadgets [6].

2.4 Database

Database is a collection of information stored for analysis or evaluation. Database is also referred as the "soul" of the application, because all existing features, settings, menus and other facilities can be connected to each other [7]

2.5 HTML

HTML or Hypertext Markup Language is a programming language that was developed with the aim of making website pages displayable using a website browser [8].

2.6 PHP

PHP: Hypertext Preprocessor is a scripting language embedded into HTML and can be used to program dynamic and interactive websites, so PHP has become popular for use. In addition, PHP can be used to build CMS [9].

2.7 Laravel

Laravel is a PHP framework that was built with the concept of MVC (Model View Controller) and it is open source [10]. Laravel has advantages among others, faster performance, more stable data reloading, and the availability of libraries so that Laravel can be a recommendation for novice users in choosing a PHP framework [11].

2.8 XAMPP

XAMPP is a software that supports many operating systems and a collection of several programs. Its function is as a host or server (localhost) on a local computer or together with applications that are running. Usually used to conduct experiments on the results of making applications or other experiments on a PC, which consists of the Apache HTTP Server program, MySQL database, and language translator written in the PHP and Perl programming languages [12].

2.9 QR Code

QR Code or Quick Response Code is an evolutionary form of barcode that can store data in it and can translate a code at high speed [13]. The characteristic of the QR Code is that it can read from all directions (360 degrees), accommodates 7089 numeric characters, and resistant to symbol storage [14].

III. RESEARCH METHODOLOGY

The research methodology used to obtain data is the primary data source from the Forum Group Discussion and a survey of the parishioners. Then the secondary data sources are obtained through related journals or references to support the primary data.

The population in this study were residents in the Parish of St. Theresia Bongsari Semarang, while the research samples were priests, parish councils, church administration officers, neighborhood leaders, and some parishioners.
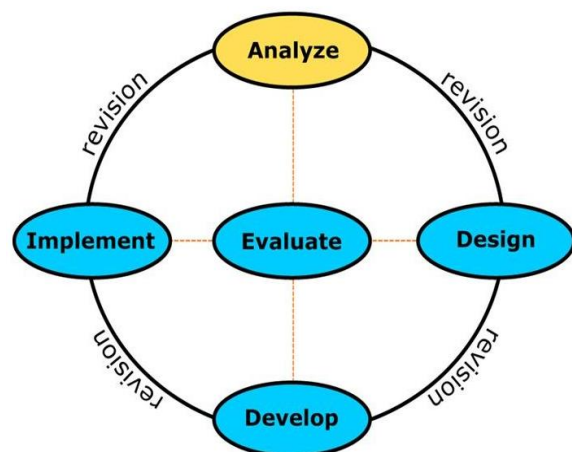

Figure 1. ADDIE model development chart [15]

At the application development stage, it is carried out using the ADDIE, Analyze, Design, Development, Implementation, and Evaluation methods. In addition, the Rapid Application Development (RAD) method is also used to support the application development process.

In the Analyze stage, data collection was carried out by holding discussions with the Priest and the Parish Council and interviews with several church administrators to find out more about the difficulties and desires in the flow of offline mass activities.

The Design phase starts from designing the application, such as making use case diagrams, activity diagrams, application development methods, and frameworks.

The Development phase is focused on making websites that can adjust the placement of page elements or responsive designs, so that applications can be used flexibly, namely on mobile or PC

The Implementation phase was carried out by testing the Website-based Offline Mass Registration application for the people of the Parish of St. Theresia Bongsari Semarang

The Evaluation stage is carried out an assessment of the Website-based Offline Mass Registration application through a survey that has been filled out by the faithful so that later it can be useful in application development.

IV. RESULTS AND DISCUSSION

4.1. Use case

According to the use case diagram, it is explained that the parishioner user has access rights in the form of login, register for masses, print barcodes, check registered parishioners, and cancel mass.

Then, the task force user has access rights in the form of login and barcode scanning.

Next, the admin user has access rights in the form of inputting people's data, inputting mass schedules, monitoring data and seeing or monitoring the reasons for canceling.
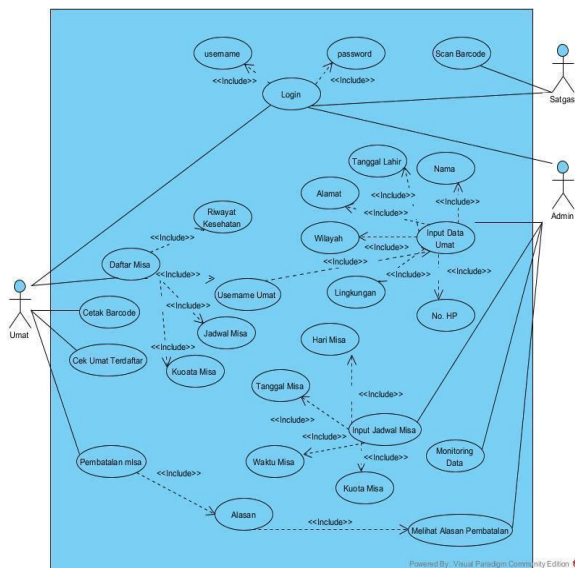

Figure 2. Usecase Diagram

4.2. Activity Diagram

Activity diagram is a flow procedure that starts from the login and continues on the

main page of each user according to their function.

People have a flow for registering for offline mass, checking offline mass registration, and canceling offline mass registration.

The mass registration flow involves the involvement of the people, the task force, and the admin. Such as barcode scanning required functions from the task force and confirmation of registered people required from the admin function.
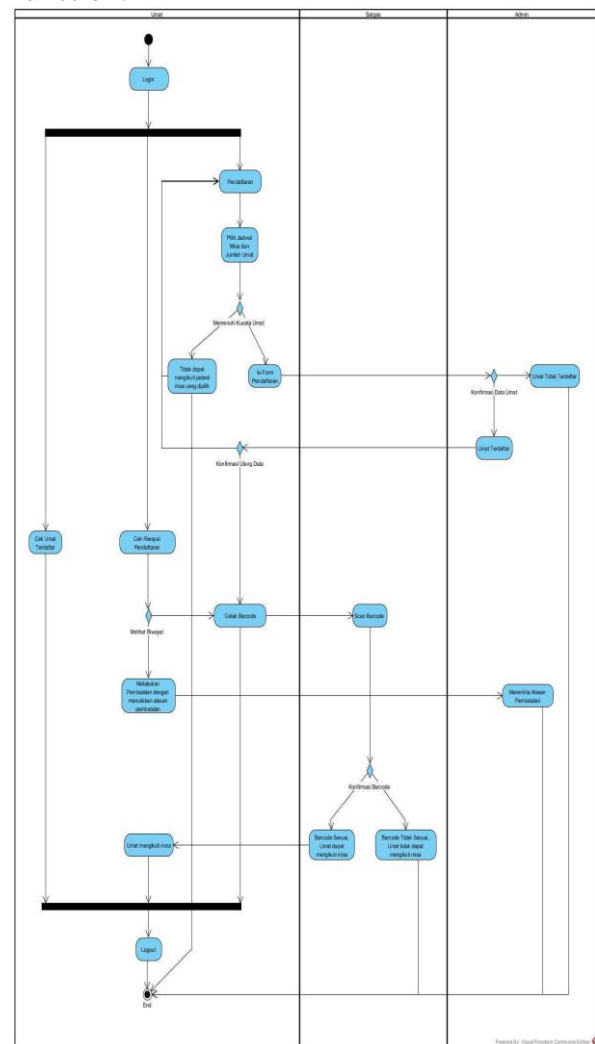

Figure 3. Activity Diagram

4.3. Data Dictionary Design

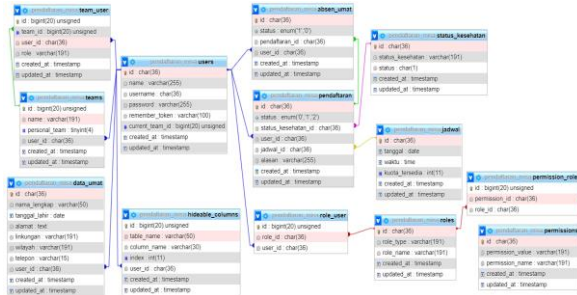Data Dictionary is an explanation of data and information needs in a database.

Figure 4. Data Dictionary Design

4.4 Application Development

The initial display of the registration website is the login page. The provisions in filling in the username are the first name and date of birth of the people without spaces then the password is the date of birth of the people.
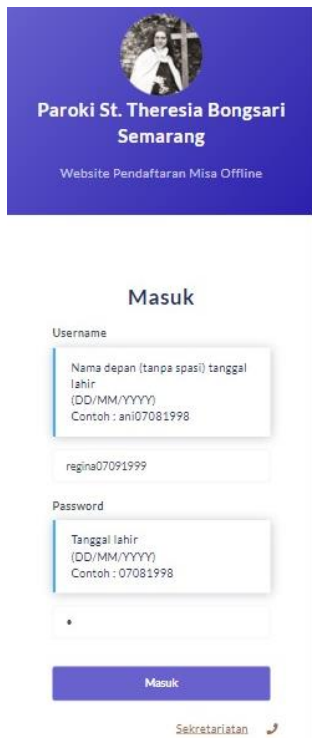

Figure 5. Login Page

After successfully logging in, the application display will change to the main menu consisting of Mass Registration, Registration Check, and Registration History.
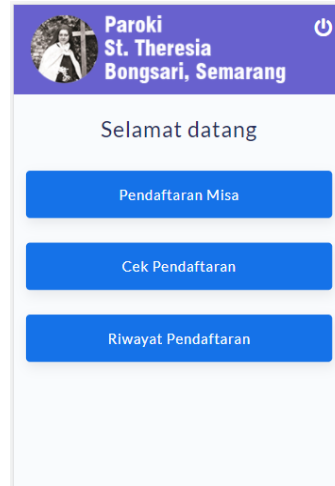

Figure 6. Main Menu Page

If the people want to register, they can choose the Mass Registration menu which will display a display in the form of selecting the mass schedule and the number of people who want to be registered after that filling in the username of the people who want to take part in offline mass and their health status.
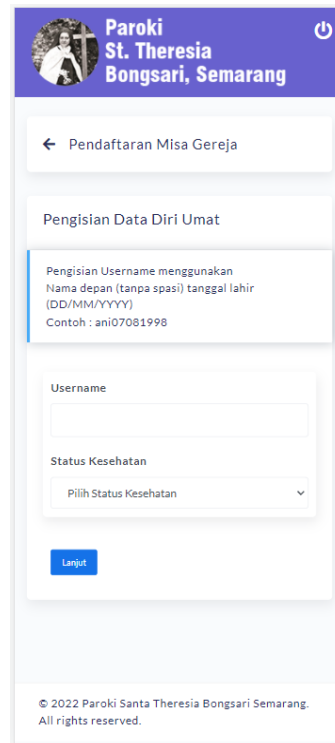

Figure 7. Personal Data Filling Page

After filling in personal data, devotees will be directed to a confirmation page and a successful registration page containing a barcode print.

Figure 8. Confirmation Page

People can also check names that have been registered for mass offline on the Check Registration menu. Then, people can also make cancellations accompanied by reasons for canceling the registered offline mass.
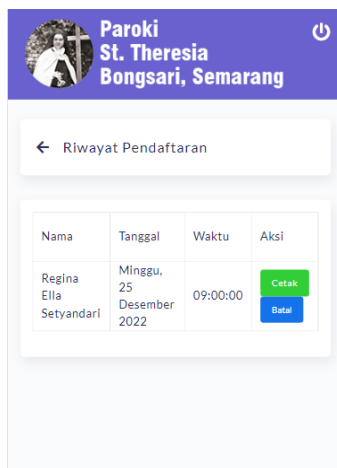

Figure 9. Registration History Page

On the task force, the page displayed is a login with the specified username and password, then directed to the QR Code scan page.
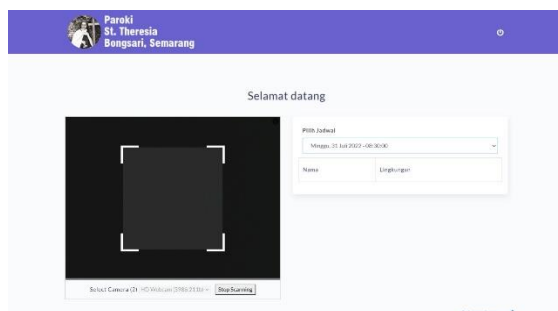

Figure 10. QR Code Scan Page

Just like other users, the admin will be directed to login with the specified username and password, then a graph and several menus will appear.
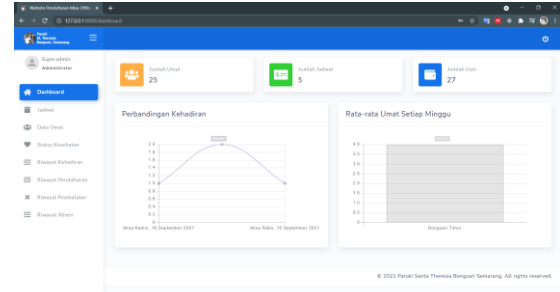

Figure 11. Main Page for Admin

The functions of these menus are as follows:

- The Schedule menu is used for making offline mass schedules as well as editing and deleting offline mass schedules.
- The People's Data menu is used to create people's personal data.
- The Health Status menu is used to set the health status.
- The Attendance History menu is used to display people who have successfully registered for mass offline as well as have scanned the QR Code.
- The Registration History menu is used to display people who have successfully registered for mass offline but have not scanned the QR Code on the task force.
- The Cancellation History menu is used to display people who have registered for mass offline but then cancel the registration along with the reasons for cancellation.
- The Absent History menu is used to display people who have registered for offline mass but did not scan the QR Code or did not cancel so that the congregation was declared absent at offline mass.

4.2. Research result

Research that has been carried out through a survey of the people of the Parish of St. Theresia Bongsari Semarang was then tested

through validity, reliability, and correlation tests using IBM SPSS Statistics.

In the validity test used measuring instruments in the form of variables FC, EE, PE, HM, against BI.

At the beginning of the validity test 1 there was an invalid data acquisition, namely the FC variable group because the values are in separate components. For these problems, it is necessary to test the validity again by eliminating one of the FC variables. Then the FC variable that is omitted is the FC3 variable because it has the smallest value of 0.074 and is located separately from other FC variables.

Table 1. 2nd Validity Test Results

Rotated Component Matrix[a]

	Component 1	Component 2
FC1	.124	.663
FC2	.559	.628
EE1	.225	.811
EE2	.461	.771
EE3	.365	.718
PE1	.396	.814
PE2	.625	.543
PE3	.658	.532
HM1	.758	.308
HM2	.692	.465
HM3	.504	.365
BI1	.796	.248
BI2	.802	.098
BI3	.717	.411

Extraction Method: Principal Component Analysis.
Rotation Method: Equamax with Kaiser Normalization.[a]

a. Rotation converged in 3 iterations.

In the table above, it can be seen that after following up the deletion of one of the FC variable groups, the 2nd validity test did not find the FC3 variable. The results of the deletion can be obtained if all variables have valid values because each variable value is positive and is gathered in the same component with the following details:

• In the FC variable, all values are gathered in component 2 and the value is above 0.4 so that it can be declared valid.
• In the EE variable, all values are gathered in component 2 and the value is above 0.4 so that it can be declared valid.
• In the PE variable, all values are gathered in component 2 and the value is above 0.4 so that it can be declared valid.
• In the HM variable, all values are gathered in component 1 and the value is above 0.4 so that it can be declared valid.
• In the BI variable, all values are gathered in component 1 and the value is above 0.4 so that it can be declared valid.

The reliability test is used to measure the consistency of a data. The variables used are FC, EE, BI, HM, and PE variables which are then determined using the range of reliability test scores.

On the FC variable, the results of the reliability test are indicated by an alpha value of 0.564 and Internal Consistency is Poor.

In the EE variable, the results of the reliability test are indicated by the alpha value of 0.860 and the Internal Consistency is Good.

In the BI variable, the results of the reliability test are indicated by the alpha value of 0.806 and the Internal Consistency is Good.

In the HM variable, the results of the reliability test are indicated by an alpha value of 0.767 and Internal Consistency is Acceptable.

In the PE variable, the results of the reliability test are indicated by an alpha value of 0.886 and the Internal Consistency is Good.

Table 2. Reliability Test Results

Variabel	Cronbach's Alpha	Internal Consistency
FC	0.564	Poor
EE	0.860	Good
BI	0.806	Good
HM	0.767	Acceptable
PE	0.886	Good

The correlation test phase is carried out to test and look for relationships between variables that are qualitative or in the form of a questionnaire. In the results obtained can be found as follows.

Correlated data is marked with a significance value (2-tailed) which is less than 0.05, so it can be concluded that:

a. FC is correlated with BI with a significance value less than 0.05 and is marked with an asterisk.

b. EE correlates with BI with a significance value less than 0.05 and is marked with an asterisk.

c. PE is correlated with BI with a significance value less than 0.05 and is marked with an asterisk.

d. HM correlates with BI with a significance value less than 0.05 and is marked with an asterisk.

Table 3. Correlation Test Results

Correlations

		SFC	SEE	SPE	SHM	SBI
SFC	Pearson Correlation	1	.774**	.762**	.706**	.658**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	60	60	60	60	60
SEE	Pearson Correlation	.774**	1	.803**	.709**	.623**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	60	60	60	60	60
SPE	Pearson Correlation	.762**	.803**	1	.751**	.749**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	60	60	60	60	60
SHM	Pearson Correlation	.706**	.709**	.751**	1	.756**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	60	60	60	60	60
SBI	Pearson Correlation	.658**	.623**	.749**	.756**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	60	60	60	60	60

**. Correlation is significant at the 0.01 level (2-tailed).

5. CONCLUSIONS

Based on the research "Website-based Offline Mass Registration application" that has been carried out, it can be concluded that the application design aims to make it easier for the people, task force, and admins during the offline mass registration process flow. The flow involves shortening the filling of personal data without the need to write all the people's personal data. Data are collected from people who enter through the QR Code owned by the parishioners as an invitation or attendance to enter the church. The application can also make mass schedules, collect community data and community activities during the offline mass registration flow. In addition, the layout of the application can adjust to the user's screen size.

The impact of the Website-based Offline Mass Registration application on the registration of the parishioners of the St. Theresia of the Bongsari Semarang was shown that people wanted to use the Website-based Offline Mass Registration application and advised other devotees to use the application. This is shown based on the results of statistical tests that have been carried out on 60 respondents on the BI variable or Behavioral Intention which stated that the results of the reliability test obtained a value of 0.806 and were included in the Good category in the range of values using the Cronbach Alpha method.

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